

Remarks

Amendment to the Specification

The Examiner objected to the Abstract for containing legal language. Specifically, the Examiner noted that the Abstract included the word “comprises.” Applicant thanks the Examiner for pointing out this error.

Applicant has replaced the word “comprises” with the word “includes.” Applicant respectfully requests withdrawal of the objection to the Abstract.

The § 103 (a) Rejections of Claims 1-18

The Examiner rejected Claims 1-15, 17, and 18 under 35 U.S.C. § 103 (a) as obvious over U.S. Patent No. 6,801,650 to Kikuchi (“Kikuchi” or “the Kikuchi patent”) in view of German Patent No. DE 19 959 228 to Stock (“Stock” or “the Stock patent”). Applicant respectfully traverses this rejection and requests reconsideration.

To establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. In addition, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The Kikuchi patent is directed to a method and apparatus for controlling focal point position of UV light for inspecting wafers. Rather than using at least one temperature sensor as claimed in independent Claim 1, Applicant respectfully submits that the Kikuchi patent is directed to the use of a single distance sensor and does not in any way use a plurality of temperature sensors or even one temperature to move a microscope stage. Applicant respectfully refers the Examiner to the Abstract in Kikuchi specifically describing the sensor as “a distance sensor 41”. The distance sensor is used to control movement of the objective lens and the object of illumination as described in col. 2, lines 42-46 of Kikuchi stating, “With the present focal point

position control mechanism, the objective lens and the object of illumination are moved relatively to each other based on the distance as detected by distance detection means, the distance therebetween is used as a pre-set target distance,...” (Emphasis added.) (See also, col. 10, line 40 discussing “a distance sensor 41”). There is no suggestion in the Kikuchi patent to use even a single temperature sensor to move a microscope stage, let alone a plurality of temperature sensors.

In addition, there is no suggestion or teaching in Kikuchi to control the movement of the microscope stage in the X or Y directions using a temperature sensor as the Kikuchi patent only teaches adjustments to focusing distance (Z direction) using the method claimed in independent Claim 8. Claim 8 claims the method moving the microscope stage in the x, y, and z directions using three motors, one for each of the x, y, and z directions. Each of the three motors receive signals from the at least one temperature sensor and correction table to maintain a position of the stage constant in time to an optical axis of the objective. In contrast, in teaching response to temperature, the Kikuchi patent discloses only movement in a x and y direction to a preset position not an optical axis and not in the z direction. (See Kikuchi col. 31, lines 27-33 and lines 38-41.

Moreover, Applicant respectfully notes that the distance sensor in Kikuchi is located on the microscope objective, not on or in the stage as is claimed in both Claims 1 and 8.

Stock is cited by the Examiner for suggesting the use of correction tables for rapid response to the movement of the stage due to ambient temperature fluctuations. However, Stock is directed to a laser scanning microscope and, like Kikuchi, fails to teach any adjustment in the X or Y directions of any stage or sample. Applicant respectfully points out that Stock would not teach or suggest any type of X or Y movement as it only teaches a confocal microscopy method which uses a scanning mirror to move the scanning beam, not a microscope stage, in the X and Y directions over the sample.

Therefore, the combined Kikuchi and Stock references fail to establish a *prima facie* case of obviousness against Claims 1 and 8 as they fail to teach or suggest all the elements of those claims. Regarding apparatus Claim 1, the combined Kikuchi and Stock references fail to suggest

or teach the use of individual stage motors on the stage to move the stage in each of the x, y, and z directions and at least one temperature sensor on or in the stage to keep the stage in a stable position independent of temperature fluctuations. Regarding method Claim 8, Kikuchi and Stock fail to disclose a method of moving a microscope stage in all three directions in response to changes in at least one temperature sensor in relation to an optical axis to keep the stage in the same position over time. Applicant respectfully requests reconsideration and allowance of Claims 1 and 8.

“If an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending therefrom is nonobvious.” *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). Claims 2-7 depend from Claim 1 and Claims 9-15, 17, and 18 depend from Claim 8 and thus incorporate all the limitations of those respective claims. Because, as discussed above, the combined Kikuchi and Stock patents fail to render obvious Claims 1 and 8, they also fail to render obvious Claims 2-7 and 9-15, 17, and 18. Applicant respectfully request the removal of the rejections of Claims 2-7 and 9-15, 17, and 18 and allowance of those claims.

The Examiner rejected Claim 16 under 35 U.S.C. § 103 (a) as obvious over the Kikuchi patent in view of Stock as applied to Claim 8 and further in view of U.S. Patent Publication No. 2002/0146628 to Ota (“Ota” or the “Ota application”). Applicant respectfully traverses this rejection and requests reconsideration.

Applicant respectfully notes that Claim 16 depends from Claim 8 and thus incorporates all the elements of Claim 8. Claim 8 claims a method of moving a microscope stage in the x, y, and z directions using motors on or in the stage with the movements based on input from at least one temperature sensor. As noted above, the Kikuchi and Stock patents lack any suggestion of using stage motors to move a microscope stage nor is there any suggestion in either reference to move the microscope stage based on input from one or more temperature sensors. Likewise, the Ota application also fails to suggest moving a stage based on input from temperature sensors or using motors in or on the microscope stage. Thus, the combined Kikuchi, Stock, and Ota references fail to establish a *prima facie* case of obviousness against Claim 16 as they fail to

teach or suggest all limitations of that claim. Applicant(s) respectfully request reconsideration and allowance of Claim 16.

Additionally, Applicant respectfully submits that there is no motivation to combine the Ota application with the Kikuchi and Stock references as the Ota application is directed to solving a different problem. Ota is directed to solving the problem of thermal expansion within a semiconductor wafer in which the thermal expansion is created by the thermal energy supplied by irradiation during the lithographic process. See paragraph 0009 in Ota stating, "This was because the wafer gradually expanded due to irradiation thermal energy on exposure." This is reiterated in paragraph 0010 stating, "Although some of the thermal energy generated dissipates from the wafer surface into the atmosphere, most of the thermal energy stays in the wafer. The remaining thermal energy conducts through the wafer, and to the wafer holder from the rear surface of the wafer." Therefore, the movement discussed in paragraph 0028 of Ota refers to movement of predetermined alignment marks within a wafer substrate.

In contrast, Claim 16 is directed to the movement of a microscope stage caused by changes in temperature, not the thermal expansion of either a stationary sample being examined, analogous to the wafer in Ota. Consequently, for this second reason, there is no motivation for a person of ordinary skill in the art to combine the statistical method of Ota with the Kikuchi and Stock references as Ota is directed to solving the problem of thermal expansion within a stationary wafer, not movement of a microscope stage in the x, y, and/or z direction(s) caused by changes in temperature. In this regard, Applicant respectfully points out that Ota is directed only to thermal expansion caused by the addition of thermal energy to a wafer not movement of a microscope stage, while Applicant's invention is directed to movement caused by changes in temperature which can be caused by increases or decrease in temperature. Therefore, for this second reason, lack of motivation to combine, Applicant respectfully submits that the combined Kikuchi, Stock and Ota references fail to render Claim 16 obvious. Applicant respectfully requests reconsideration and allowance of Claim 16.

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Conclusion

Applicant respectfully submits that the present application is now in condition for allowance, which action is courteously requested. The Examiner is invited and encouraged to contact the undersigned attorney of record if such contact will facilitate an efficient examination and allowance of the application.

Respectfully yours,



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